



Legal Department, Floor 17  
800 Boylston Street, Boston, Massachusetts 02199

William S. Stowe  
Assistant General Counsel

Tel: 617-424-2544  
Fax: 617-424-2733  
[William\\_Stowe@nstaronline.com](mailto:William_Stowe@nstaronline.com)

March 25, 2002

**VIA COURIER**

Mary L. Cottrell, Secretary  
Department of Telecommunications and Energy  
One South Station, Floor 2  
Boston, MA 02110

**Re: D.T.E. 01-95**  
**Petition of Franklin W. Olin College of Engineering**  
**Boston Edison Responses to Information Requests**

Dear Secretary Cottrell:

Enclosed herewith for filing are Boston Edison Company's Responses to the Franklin W. Olin College of Engineering's Second Set of Information Requests and the Wellesley Municipal Light Plant's Third Set of Information Requests in the above-captioned matter.

If there are any questions regarding this submittal please contact the undersigned.  
Thank you for your attention to this matter.

Sincerely,

A handwritten signature in dark ink, appearing to read "William S. Stowe", written in a cursive style.

Enclosures

cc: Robert Hayden, Hearing Officer  
Ronald LeComte, Electric Power Division  
Eric J. Krathwohl, Esq.  
David S. Rosenzweig, Esq.  
Richard Joyce, Director WMLP  
Stephen P. Hannabury, Vice President Olin College  
Kenneth Barna, Esq.

**COMMONWEALTH OF MASSACHUSETTS  
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY**

Franklin W. Olin College of Engineering

D.T.E. 01-95

**CERTIFICATE OF SERVICE**

I hereby certify that I have this day served the foregoing responses to information requests in accordance with the Department rules.



William S. Stowe  
Attorney for  
Boston Edison Company  
800 Boylston St., Floor 17  
Boston, MA 02199

DATED: March 25, 2002

Information Request WMLP-3-1

On page 7, beginning at line 10 of Mr. Jeffrey J. Niro's testimony it is stated "I was surprised that Olin had made its decision regarding distribution service as early as 1999 (Response to Information Request BE-2-33, Exhibit 2 (Letter from David Peduto to Gary R. Babin, October 18, 1999)) because, at that time and until November 2001, Boston Edison was still working to provide viable options to Olin and believed a mutually agreeable accommodation could be reached."

- a. Was this October 18, 1999 correspondence really sent from Mr. Peduto as stated by Mr. Niro?
- b. In Olin College's responses to the BECo's extensive Information Requests did Olin provide BECo with a copy of this correspondence?
- c. Is it possible Olin never knew this correspondence was in existence until WMLP provided a copy to BECo in response to Information Request BE-2-33, Exhibit 2?
- d. If BECo's response to (c) above is anything but yes, please provide the factual basis for BECo's response.

Response

- (a) No. The names were transposed in the referenced citation. The citation should have read: "Response to Information Request BE-2-33, Exhibit 2 (Letter from Gary R. Babin to David Peduto, October 18, 1999)."
- (b) No.
- (c) The Company is not in a position to confirm what Olin knew at that point in time; however, Mr. Babin indicates in his letter that the Olin Foundation verbally indicated its intent to receive its electric supply from WMLP. While the Company is not entirely familiar with the corporate development of Franklin W. Olin College of Engineering ("Olin College" or the "College"), it is the Company's understanding that the Olin Foundation founded Olin College. Therefore, the Company presumes

that, in the early stages of Olin College's development, the Olin Foundation would have been acting on the College's behalf.

- (d) Mr. Hannabury's Affidavit, attached to Olin's Petition in this proceeding, as well as Olin's responses to information requests have repeatedly stressed the integrated and cooperative relationship between Olin and Babson. Without agreeing to the proposition, Boston Edison interprets Olin's position regarding its relationship with Babson as a factor that Olin would like the Department to consider in determining Boston Edison's franchise rights. The genesis of the Olin Foundation and its ultimate development into Olin College is described in Exhibit B to Stephen Hannabury's Affidavit, signed November 8, 2001.

Information Request WMLP-3-2

Based on BECo's conclusion that Olin had already "made its decision" based on this October 18, 1999 correspondence please identify BECo's understanding of Mr. Peduto's role at Babson College as it relates to Olin College? Please provide specific examples that support BECo's understanding of Mr. Peduto's role

Response

Mr. Niro's statement that he believed Olin had made its decision regarding distribution supply on October 1999 is not based on an assumption of facts, other than the statement in the referenced letter by WMLP's employee, Mr. Babin, that "the Olin Foundation ha[d] verbally indicated that they wish to secure their electric supply from WMLP through the Babson College switchgear." This October 18, 1999 correspondence is directed to Mr. Peduto as "Director of Facilities" for Babson College. This is the extent of the Company's knowledge regarding Mr. Peduto's specific role and responsibilities at Babson College. Olin has repeatedly emphasized the close coordination and close working relationship that Olin and Babson have developed, including, specifically, in the area of utility service. While Boston Edison is not in a position to confirm the accuracy of this claim, the statement by Mr. Babin that Olin had verbally decided to secure supply from WMLP is taken as an indication of Olin's position at that point in time.

Information Request WMLP-3-3

Based on WMLP and Olin responses to BECo's extensive Information Requests please identify the number of times and the specific response(s) in which Mr. Peduto's name appears (other than Mr. Babin's October 18, 1999 correspondence).

- a. Number of emails sent by or to Mr. Peduto.
- b. Number of, and the dates of, meetings between BECo, Olin, Babson and/or WMLP that Mr. Peduto attended in which the electric service provider issue was discussed.
- c. Identify any correspondence that was sent by Mr. Peduto to Babson, Olin, BECo and/or the WMLP relative to Olin College's electric service.
- d. Identify any analysis, correspondence or other communications that Mr. Peduto prepared that supports BECo's conclusion that this individual was, or had, represented Olin College at any time in this process.

Response

- (a) None, based on the information supplied by Olin. However, the discovery provided in this case demonstrates that there was a greater level of discussion between Olin, Babson and WMLP during the relevant time period than there was between Olin and Boston Edison. The Company is unaware of the extent of Mr. Peduto's role in those discussions.
- (b) See the response to part (a), above.
- (c) See the response to part (a), above.
- (d) See the response to part (a), above.

Information Request WMLP-3-4

Please state BECo's understanding of Mr. Peduto's title and role at Babson College that has led BECo to conclude that this individual had the authority to make any decision on behalf of Olin College in the selection of its electric service provider.

Response

Please see the response to Information Request WMLP-3-2.

Information Request WMLP-3-5

At the time of the October 18, 1999 correspondence was Mr. Peduto an employee of Babson College or Aramark.

Response

Please see the response to Information Request WMLP-3-2.



Information Request WMLP-3-6

Beginning on page 9, line 21 of Mr. Jeffrey J. Niro's testimony it is stated "While Mr. Hannabury's affidavit places great reliance in comparing the economics of connecting to Boston Edison versus WMLP (see Hannabury Affidavit at ¶4), it is an "apples-to-oranges" comparison, ...". Based on the responses received from BECo's extensive Discovery Requests please reference the specific documents BECo relied on that support its "apples-to-oranges" statement.

- a. Please identify the methodology used by the WMLP to determine its costs to interconnect Olin College.
- b. How does WMLP's methodology differ from BECo?
- c. In June 2001 when BECo "presented Olin with an analysis of five (5) service options." (Niro testimony, page 6, lines 6 and 7) did BECo provide cost estimates for each option?
- d. Please provide BECo's analysis of the five service options that it provided to Olin.
- e. Please provide the service option that BECO recommended to Olin. Please provide the basis, including economic, technical and reliability reasons, for this recommendation.
- f. Of the five service options that BECO has provided to Olin, please provide the service option which is most comparable in terms of economic, cost, reliability and environmental impacts, to WMLP's proposed electric service to Olin. Please provide the basis and support for this answer.
- g. What specific steps did BECo take, other than to request more information from Olin, to ensure Olin had all of the necessary information to complete an "apples-to-apples" comparison between BECo and WMLP?

Response

Boston Edison is not fully able to determine the costs for WMLP to interconnect Olin College because the details of such interconnection have not been fully

presented, either in terms of WMLP's dedicated underground cable supply to Babson or the alternative routes of service for Olin across the Babson campus. Details regarding the five options presented by Boston Edison are contained in Attachment OC-1-10. All of these options are reasonable approaches to provide reliable electric service to Olin. Boston Edison made no recommendation of one option over another and was not requested to do so. Boston Edison was not presented information regarding WMLP's proposal sufficient to permit the requested comparisons with Boston Edison's options. Boston Edison's communications with Olin are documented in response to Information Request OC-1-6.

Information Request WMLP-3-7

Given NERO's testimony on page 21, lines 13-17, please provide the electric service, including the length of such service in terms of years and the specific geographic point of such service, that WMLP has provided to the property in question before the Department as set forth in Olin's Petition in D.T.E. 01-95.

Response

The request is not clear in its reference to the "property in question." Treating that as a reference to the entirety of the property that is now owned by Olin and that was formerly owned by Babson, the Company's understanding of electric service to this property is as follows:

1. Boston Edison has provided electric service to portions of the property along Great Plain Avenue and Curtis Road, consisting of several single family houses, now converted to use as administration buildings, for a period of time prior to the purchase of the property by Olin and continuing to date.
2. WMLP has provided electric service to Babson at a point on the Babson campus in Wellesley. Babson has in turn distributed that power across its campus through its own internal distribution system. The precise extent of the area served by Babson's internal distribution system is not known, and has changed in recent years as a result of the installation of a "temporary" service onto the Olin property and the construction of the Olin campus. Apart from this "temporary" service which Boston Edison believes to be illegal and improper and therefore should not be considered, the only area of the Olin property that has previously received electric service through the Babson system supplied by WMLP appears to be the area referenced in the February 20, 2002 affidavit of Stephen Hannabury as a "a portion of Map Hill Drive" which had security lighting. The affidavit does not state when that electric service was put in place but does indicate that it has since been "relocated" in order to allow construction of the Olin campus. It is thus our understanding that there is currently no Babson or WMLP electric service to this parcel other than the "temporary" service.

3. The major portion of the Olin property appears to have been largely undeveloped with no electric service prior to the commencement of construction of the new Olin campus.

Attachment WMLP-3-7 is a map similar to Attachment WMLP-2-1 showing in blue the approximate area of the Olin property serviced by Boston Edison and showing in red the approximate area formerly served for security lighting purposes by Babson/WMLP.

Information Request OC-2-1

Referencing page 8, line 5 of Mr. Jessa's testimony, please specify all "other details."

Response

The reference to "other details" was not intended as a specific list. As an initial matter, the reference would include information that is required for initiation of a work order for a customer of Olin College's size. See Attachment OC-2-1 for information that is typically required to initiate the process. Further information might well be required as the process continued.



**Information Required for Work Order Initiation**

**Facility Address:**

Street: \_\_\_\_\_ Suite: \_\_\_\_\_  
Town: \_\_\_\_\_ Zip: \_\_\_\_\_

**Type of Facility:** \_\_\_\_\_ **Facility Square Footage:** \_\_\_\_\_

**Requested In Service Date:** \_\_\_\_\_ **NSTAR Rep:** \_\_\_\_\_

**Customer:**

Name: \_\_\_\_\_  
Billing Address: \_\_\_\_\_  
City, State, Zip: \_\_\_\_\_  
Existing Account or Meter Number (if existing service increase): \_\_\_\_\_  
Telephone: \_\_\_\_\_ Tax ID \_\_\_\_\_

**If Property Owner different than Customer:**

Property Owner Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City, State, Zip: \_\_\_\_\_  
Phone: \_\_\_\_\_

**Brief Description of Service Request:** \_\_\_\_\_  
\_\_\_\_\_

**Number and Size of Electrical Main Disconnect Switch (in amps):** \_\_\_\_\_

**Heating System Energy Source:** \_\_\_\_\_

**Desired Service Voltage:** \_\_\_\_\_

**Number of Meters:** Commercial \_\_\_\_\_ Residential \_\_\_\_\_ Public \_\_\_\_\_

**On site Emergency Generator (size in KW and description of use):**  
\_\_\_\_\_

**Largest Motor (other than fire pump):**

HP \_\_\_\_\_ Phase \_\_\_\_\_  
Locked Rotor Current (amps) \_\_\_\_\_

### **Information Required for Work Order Initiation (cont.)**

**Breakdown of Demand:** (A detailed Load Letter clearly identifying breakdown of demand).

**Contact Name:**

Electrician: \_\_\_\_\_

License Number \_\_\_\_\_

Business Name: \_\_\_\_\_

Street Address: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_

Telephone: \_\_\_\_\_ Best Time to Call: \_\_\_\_\_

**NOTES:**

For Temporary Service Requests, please submit a site plan that illustrates the service location.

For Service Increases at existing facility, please submit a single One-Line Diagram.

For New Commercial Services and for New Two 13.8 kv Line Station Electric Service please submit (2) two copies of the approved local city site plan that illustrates new facility location and proposed location of new utilities (electric, gas, water, sewer, telecommunications) and a single One-Line Diagram.

## **New Commercial**

### **Two 13.8 kv Line Station Electric Service**

#### **Required Utility Information**

- ⇒ Eight copies (8) - Approved local city site plan that illustrates new facility location and proposed location of new utilities (electric, gas, water, sewer, telecommunications)
- ⇒ Eight copies (8) – One-Line Diagram
- ⇒ Eight copies – Switchgear Shop Drawings
- ⇒ Facility address
- ⇒ Type of facility (i.e. hotel, office building, hospital, etc.)
- ⇒ New facility square footage
- ⇒ Heating system energy source (i.e., natural gas, oil, steam)
- ⇒ In service request date
- ⇒ Overhead or underground service
- ⇒ Breakdown of new facility electrical loads in kilowatts (KW)
- ⇒ # of tons of Air Conditioning
- ⇒ Size in KW for on-site emergency generator and description of use
- ⇒ Special conditions and/or circumstances
- ⇒ Customer Name & Billing Address



**Boston Edison**  
AN *NSTAR* COMPANY

800 Boylston Street (DART 35), Boston, MA 02199-8003



Information Request OC-2-2

Referencing page 10, lines 16-17 of Mr. Jessa's testimony, please provide: (a) all "industry-wide averages"; (b) all calculations yielding the "expected reliability" of 0.2 failures/year. To the extent, the methodology of the calculation is not clear from the calculation, please explain such methodology.

Response

The source is ABB T&D Power Company which has been assisting NSTAR with enhancements to its distribution planning process. ABB has advised that the industry average for the reliability of an overhead distribution circuit would typically be within a range of 0.2 failures /mile/year.

Information Request OC-2-3

Referencing page 14, lines 18-20 of Mr. Jessa's testimony, please state when the decision was made to replace the first Station #148 transformer. Provide documentation confirming that date and describing the decision making rationale for such replacement.

Response

Please refer to Attachment OC-2-3. Final approval of this project occurred on January 31, 2002.



## PROJECT AUTHORIZATION DOCUMENT

<b>Operating Area:</b> Electric Operations	<b>Title:</b> Needham Station #148 Newton Station #292
<b>Company:</b> Boston Edison Co.	<b>Project Authorization Number:</b> 25004
<b>Project Sponsor:</b> Ellen Angley	<b>Date Prepared:</b> January 14, 2002
<b>Project Manager:</b> Charles Salamone	<b>Supplement to Existing Authorization:</b> (circle one) Yes or <input checked="" type="checkbox"/> No

### EXECUTIVE SUMMARY:

An authorization is requested for a \$6,280,000 capital expenditure to increase the capacity at Needham Station #148 to reliably supply the increased load and improve the voltage regulation in the towns of Needham, Dedham, Dover and Westwood.

Needham Station #148 and Newton Station #292 supply the communities of Needham, Newton, Dedham, Brookline, Dover, Westwood and Wellesley Municipal Light Plant. Needham Station #148 has a firm capacity of 48 MVA. The transfer switching to adjacent substations is approximately 16.1 MVA. Needham's load carrying capability (LCC) (i.e. firm capacity + transfer switching) is 64.1 MVA. Newton Station #292 has a firm capacity of 144 MVA. The transfer switching to adjacent substations is approximately 8.5 MVA. Newton's load carrying capability (LCC) (i.e. firm capacity + transfer switching) is 152.5 MVA. Wellesley Municipal Light Plant has a 56 MVA capacity entitlement at Newton Station #292 and 23 MVA capacity entitlement at Needham Station #148.

The region continues to experience load growth. In the summer of 2001 the region's load was 249 MVA, versus the region's load carrying capability of 272 MVA. Both Needham Station #148 and Newton Station #292 have exceeded their respective load carrying capability during the summer of 2001.

#### *Present Situation*

	110 A Cyclic Capability	110B Cyclic Capability	110C Cyclic Capability	Transfer capability out of station	Firm (MVA)	2002 Peak Load	LCC (MVA)
Needham	60	48	N/A	16.1	48	74.6	64.1
Newton	60	60	120	8.5	144 *	166.3	152.5

\*Newton Firm Capacity includes 24 MVA of transformer capacity supplied from Station #110 Baker Street.

The developments within the Needham/Newton Road regions will occur over a period of years. The exact timing of some of these developments is still somewhat uncertain. Considering this uncertainty, it is prudent at this point to separate the project into two phases. Each phase will be economically evaluated on its own merits under separate project authorizations.

The first phase of this project consists of the following:

- Replace Needham #148 110B transformer (30/40 MVA) with a new, single-secondary winding LTC transformer (37/50/62.5 MVA) (In-Service Year 2002: estimated cost \$5 million)
- Increase transfer switching at Needham Station #148 and Newton Station #292 (In-Service Year 2002: estimated cost \$150k)
- Install additional distribution infrastructure in the Newton – Watertown region to accommodate a 3.7 MVA load transfer from Newton Station #292 to Watertown Station #467 In-Service Year 2002: estimated cost \$1 million)
- Install pole-top voltage regulators on select distribution circuits at Needham #148 (In-Service Year 2002: estimated cost \$100k)

The upgrade of transformer capability of Needham Station #148 was identified in the Electric Operations 10-year plan (2001-2011). This project will increase the firm capacity of Needham Station #148 to 60 MVA and its LCC to 82.5 MVA. The project will increase the LCC of Newton Station #292 to 167.3 MVA. Based on the existing load forecast, the installation of a new transformer at Needham Station #148 will provide ample transformer capacity to support the station's load through 2004.

*Proposed Work (transformer additions and changes underlined)*

	110 A Cyclic Capability	110B Cyclic Capability	110C Cyclic Capability	Transfer capability out of station	Firm (MVA)	2002 Peak Load	LCC (MVA)
Needham	60	<u>75</u>		<u>22.5</u>	<u>60</u>	74.6	<u>82.5</u>
Newton	60	60	120	<u>23.3</u>	144*	166.3	<u>167.3</u>

\*Newton Firm Capacity includes 24 MVA of transformer capacity supplied from Station #110 Baker Street.

The required in-service date for the permanent load transfer of 3.7 MVA from Newton Station #292 to Watertown Station #467 is June 1, 2002.

The required in-service date for increasing the Needham and Newton transfer switching capability is June 1, 2002.

The required in-service date for replacing Transformer 110B at Needham Station #148 is June 1, 2002. However due to equipment delivery dates the in-service is expected by August 1, 2002.

The project is included in the 2002 Life Cycle Plan, 10-Year Electric Operations Plan and Capital Budget.

**NPV @7.72% = \$14.09 M @ year 30**

**IRR = 29.4%**

**Payback 5 years**

**FORECAST OF EXPENDITURES IN THOUSANDS OF DOLLARS**

	2002	2003	2004	2005	2006	Thereafter	Totals
Capital	\$6,280						\$6,280
Customer Contribution							\$
Expense							\$
Total Request	\$6,280						\$6,280

Approval	Date	Technical Area Sign-Off	Date
Project Sponsor		Budgeting & Forecasting	
Fixed Asset Accounting		Regulatory	
Strategic and Financial Planning (Over \$500,000)		Accounting	
Vice President and Controller		Legal	
Vice Presidents of Other Impact Areas (if applicable)		Tax	
Vice President IT (Technology only)		Safety	
Sr./Ex. Vice President (Over \$1,000,000)		Environmental	
Chief Operating Officer (Over \$5,000,000)		Corporate Relations	
Chief Executive Officer (Over \$5,000,000)		Purchasing	
Approved by the Internal Board at its Meeting Of:			

## **JUSTIFICATION**

### **I. Project Description & Objectives:**

The proposed project is an integrated plan that consists of the following:

- Install distribution infrastructure in the Watertown – Newton region to accommodate a permanent load transfer of 3.7 MVA from Newton Station #292 to Watertown Station #467 to be in-service to June, 2002
- Increase transfer switching for Needham Station #148 and Newton Station #292 to be in-service prior to June, 2002
- Replace Needham #148 110B transformer (30/40 MVA) with a new, single-secondary winding LTC transformer (37/50/62.5 MVA) during 2002 to be in-service prior to August, 2002
- Install pole-top voltage regulators on select distribution circuits at Needham #148 during the Spring 2002.

The installation of the new 115/14 kV transformer at Needham Station #148 will increase Station #148's firm capacity by 12 MVA. This project is the least-cost solution that provides sufficient Needham station capacity to support the region's anticipated load growth through 2004. The additional Needham Station #148 capacity is part of an integrated plan identified in the Electric Operations 10-Year Plan.

### **II. Scope**

**Needham Station #148 Work -- \$5.03 million (includes payment for two ABB transformers)**

#### **2002**

- Relocate the 115 kV capacitor bank. Bifurcate the 115kv capacitors with line 240-510 (Framingham-Needham-Baker Street 115kv line)
- De-energize the existing transformer 110B.
- Install a 37/50/62.5 MVA nameplate, single-secondary-winding, 115/13.8 kV transformer with 115 kV disconnect switch. (New transformer 110B)
- Replace the transformer 110B 115 kV switch with a new 1200A disconnect switch and extend new 115 kV feeds over to the new transformer.
- Modify/upgrade SCADA RTU
- Install new transformer secondary duct banks and manhole system to the 15 kV switchgear
- Modify/upgrade existing transformer secondary cubicle 13 to 3000 amp continuous rating.
- Modify/upgrade transformer relay systems
- Remove existing transformer 110B
- Add one new 1200 amp feeder cubicle to each end of the existing 15 kV switchgear.

#### **Distribution Work (\$1.25 million - 2002)**

- Install six sets of pole-top voltage regulating transformers on the distribution circuits supplied by Needham's Station #148 bus section #1.
- Install overhead and underground distribution within Newton and Watertown to accommodate a permanent load transfer of 3.7 MVA from Newton Station #292 to Watertown Station #467.

- Install a RADSEC switch on P35-26/7, Kendrick Street Needham
- Install a RADSEC switch on P475/9, Woodland Road Newton
- Install a RADSEC switch on P447/228A, Washington Street Newton
- Install a RADSEC switch on P148/3, Second Avenue, Needham
- Install a RADSEC switch on P148/14, Second Avenue, Needham
- Install a RADSEC switch on P8/14, Central Avenue, Needham

### **III. Justification**

Needham Station #148 and Newton Station #292 supply the communities of Needham, Newton, Brookline, Dover, Westwood and Wellesley Municipal Light Plant. The region continues to experience load growth. In the summer of 2001, the region's peak load was 249 MVA versus a regional load carrying capability of 272.3 MVA.

Needham Station #148 (115/14 kV) supplies portions of the towns of Needham, Dedham, Dover, Westwood and Wellesley Municipal Light Plant. During the summer of 2001, the Needham Station #148 peak load was 74.7 MVA, which was 5% higher than the 2001 load projection of 71 MVA. By the year 2002, the region's projected load may reach beyond the projected 74.6 MVA. Needham Station #148 has a firm capacity of 48 MVA. There is transfer switching to adjacent substations, approximately 16.1 MVA. Needham Station #148's load carrying capability (LCC) (i.e. firm capacity + transfer switching) is 64.1 MVA. Wellesley Municipal Light Plant has a 23 MVA capacity entitlement at Needham Station #148.

Newton Station #292 serves a power supply area consisting of parts of the towns of Needham, Brookline, the City of Newton, and Wellesley Municipal Light Plant. Newton Station #292 has a firm capacity of 144 MVA. The transfer switching to adjacent substations is 8.5 MVA. Newton's load carrying capability (LCC) (firm capacity + transfer switching) is 152.5 MVA. Wellesley Municipal Light Plant has a 56 MVA capacity entitlement at Newton Station #292.

As the load grows within the service territory, the amount of available transfer switching will decrease by the amount of load growth occurring at adjacent substations. The net result will be a reduction in the substation and region's load carrying capability. By 2011, the LCC of Needham Station #148 and Newton Station #292 will be 61.6 and 150.2 MVA, respectively.

#### **NEEDHAM STATION #148**

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Projected Load (kva)	74,700 (Note A)	74,600*	77,100*	79,600*	83,100*	86,600*	89,100*	91,600*	94,600*	97,600*	100,000*
Load carrying capability (kva)	68,400	64,100	64,100	63,600	63,400	63,000	62,800	62,500	62,200	61,900	61,600
Load at risk (kva)	6,300	10,500	13,000	16,000	19,700	23,600	26,300	29,100	32,400	35,700	38,400

#### **NEWTON STATION #292 (assumes 25% internet hotel loading)**

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Projected Load (kva)	174,500 Note (A)	170,000*	173,200*	177,300*	180,300*	183,300*	185,300*	187,300*	189,300*	191,300*	193,300*
Load carrying capability (kva)	162,800	152,500	152,500	152,100	151,800	151,600	151,300	151,000	150,800	150,500	150,200
Load at risk (kva)	11,700	17,500	20,700	25,200	28,500	31,700	34,000	36,300	38,500	40,800	43,100

(A) Actual 2001 Summer Peak Load

\* The actual 2001 summer peak load exceeded the projected load forecast. The future station loading will be subjected to adjustments based upon the revisions to the current load forecast.

The tables shown above display the projected load on Needham Station #148 and Newton Station #292 for a 10-year period in addition to the projected deficiency between load and supply. Based on actual load, the Needham, Newton, Brookline, Dedham, Dover and Westwood region's load in combination with Wellesley Municipal Light Plant load exceeded the Needham Station #148 and Newton Station #292 LCCs in 2001. There are several operating conditions that would strain the region's capability. A single contingency outage of transformer 110A at Needham Station #148 would strain Needham's load carrying capability; the single-contingency outage of transformer 110C at Newton Station #292 or the loss of either Newton-Baker Street 115 KV line (292-522 or 292-523) would strain Newton's load carrying capability. This potentially un-served load needs a safe and reliable source, to cost-effectively supply the customers.

The existing 115/14kV transformers at Needham, Station #148 are non-regulating transformers. As result of this lack of voltage regulation capability, some of the distribution circuits supplied from Needham Station #148 experience voltage problems throughout the year. The installation of new LTC 115/14kV transformer and the pole-top voltage regulators on select distribution circuits will increase the station's capacity and address the voltage problems.

The installation of additional distribution infrastructure in the Newton - Watertown region will support a 3.7 MVA permanent load transfer from Newton Station #292 to Watertown Station #467. The installation of RADSEC switches will increase the respective stations' transfer switching capability. The installation of the new 115/14 kV LTC transformer at Needham Station #148 will increase Station #148's firm capacity by 12 MVA. This project is the least-cost solution that provides sufficient capacity to support the Needham's anticipated load growth through 2004.

#### IV. Financial Evaluation

A \$6,280,000 capital expenditure is required to perform the work to increase the Needham/Newton region's transfer switching, to accommodate a 3.7 MVA permanent load transfer from Newton Station #292 to Watertown Station #467 and to install a new single-secondary-winding 37/50/62.5 MVA power transformer at Needham Station #148, which will replace the existing transformer 110B.

Year	Action	Cost
2002	Install distribution infrastructure in the Watertown -Newton Region, including 6 RADSEC switches in the Newton - Needham region	\$1.25M
2002	Replace transformer 110B at Needham Station #148	\$5.03M



The benefit of the project enables NSTAR to reliably supply the increasing Needham, Newton, Brookline, Dedham, Dover and Westwood loads. Compared to the other alternatives being considered, the integrated plan is the most cost-effective approach for supporting the region's load in the 2002 to 2004 planning time horizon.

The NSTAR Financial Analysis Model (FAM) for this project has a payback of 5 years with an IRR of 29.43%. Net Present Value (NPV) of this investment is \$14.09 million.

## **V. Sensitivity Analysis**

None.

## **VI. Risk Assessment**

Any delay in the installation of the new 115/14kV transformers at Needham Station #148 may overload the Needham Station #148, and for the severest condition could require load shedding during heavy summer load conditions in the Needham, Dedham, Dover and Westwood region. The degree of potential un-served load and length of potential outage would be dependent on the load growth.

## **VII. Alternatives Considered**

Asset Management has conducted a supply study to determine the optimal long-term solution. The alternatives considered to resolve the problem include:

1. **Expand Needham Station #148** - Replace transformers 110A and 110B with two new larger LTC transformers (84/112/144 MVA).
  - 2002 – Install distribution infrastructure in the Watertown - Newton Region
  - 2002/2003 -- Replace the existing transformers 110A and 110B with two new larger LTC transformers (84/112/144 MVA).

COST: Station work:	\$10.8M
Distribution Work	\$ 1.25M
Total Project Cost	\$12.05M

PROS: Increases Needham Station, #148 firm capacity to 150 MVA (~102 MVA increase)  
Increases Needham-Newton region's LCC capacity to 434 MVA (~164 MVA increase)  
Long-term solution to relieve station beyond 2015  
Solves the voltage regulation concerns

CONS: Higher cost for substation development  
Needham Station #148 not located near the load, nor the anticipated load growth  
Station #148 getaways, cable egress – Great Plain Ave (underground) may restrict the ability to use all of transformer capability  
Significant short circuit concerns – requires the installation of series line reactors @ \$1.6 Million.

2. **Expand Needham Station #148** - Replace transformers 110A and 110B with three new larger LTC transformers.

- 2002 -- Install distribution infrastructure in the Watertown - Newton Region
- 2002/2003 -- Replace the existing transformers 110A and 110B with three new larger LTC transformers (37/50/62.5 MVA).

COST: Station work: \$9.5 M  
 Distribution Work \$1.25M  
 Total Project Cost \$10.75M

PROS Increases Needham Station, #148 firm capacity to 150 MVA (~102 MVA increase)  
 Increases Needham-Newton region's LCC capacity to 434 MVA (~164 MVA increase)  
 Long-term solution to relieve station beyond 2015  
 Solves the voltage regulation concerns

CONS: Higher cost for substation development  
 Needham Station #148 is not located near the load, nor the anticipated load growth  
 Station #148 getaways, cable egress – Great Plain Ave (underground) may restrict the ability to use all of the transformer capability

3. **Expand Needham Station #148 -- Replace transformer 110B and install a new transformer 110C. (Recommended Solution)**

- 2002 -- Install distribution infrastructure in the Watertown - Newton Region
- 2002 -- Replace the existing transformer 110B with a new, larger LTC transformer (37/50/62.5 MVA)
- Future Work (2005) -- Install a new LTC transformer (37/50/62.5 MVA) as transformer 110C – **(Note: The Future work will be supported by a separate project authorization)**

COST: Station work: \$8.475M  
 Distribution Work \$1.25 M  
 Total Project Cost \$9.725M

PROS: Increases Needham Station, #148 firm capacity to 135 MVA (~87 MVA increase)  
 Increases Needham-Newton region's LCC capacity to 374 MVA (~104 MVA increase)  
 Long-term solution to relieve station through 2015  
 Solves the voltage regulation concerns

CONS: Needham Station #148 is not located near the load, nor adjacent to the anticipated load growth  
 Station #148 getaways, cable egress – Great Plain Ave (underground) may restrict the ability to use all of the transformer capability

4. **Expand Needham Station #148: Install a third 115/14kV transformer 110C.**

- 2002 -- Install distribution infrastructure in the Watertown - Newton Region
- 2002 -- Install a new LTC transformer (37/50/62.5 MVA) as transformer 110C.

COST: Station work \$6.25M  
 Distribution Work \$1.25M  
 Total Project Cost \$7.5M

PROS: Allows the relief of Newton Station #292 up to 15 MVA. This will require DSS/Distribution infrastructure between Stations #148 and #292.  
Increases Needham Station #148's firm capacity to 108 MVA (~60 MVA increase)  
Increases Needham-Newton region's LCC capacity to 347 MVA (~77 MVA increase)

CONS: Existing transformers 110A and 110B are non-LTC transformers.  
Solution may create difficult operating issues and concerns during contingencies.  
Voltage concern upon the loss of new LTC transformer  
Potential circulating currents: customer 2-line stations will be supplied by both a non-LTC and LTC transformer, requiring the bridging of transformers under certain operating conditions.  
Station #148 getaways, cable egress – Great Plain Ave (underground) may restrict the ability to use all of the transformer capability.

The study has determined increasing Needham Station #148 and Newton Station #292 transfer switching capability, in combination with a 3.7 MVA permanent load transfer from Newton Station #292 to Watertown Station #467 and the installation of a new single-secondary-winding 37/50/62.5 MVA power transformer to replace the existing transformer 110B is the preferred solution.

#### **VIII. Interdependencies & Implications**

#### **IX. Technology Assessment (Information System Projects Only)**

#### **X. Project Schedule, Milestones & Implementation Plan:**

Project Authorization Approved:	January 2002
Begin Design/Engineering:	January 2002
Order Equipment:	January 2002
Begin Distribution Design/Engineering to Increase Needham And Newton Stations transfer switching	January 2002
Start Overhead Distribution Construction	March 2002
Increase Needham and Newton Transfer Switching Completed	June 2002
Construction Starts Needham Replace Transformer 110B:	May 2002
First Phase of construction completed:	
New Transformer 110B in service	July 2002

Information Request OC-2-4

Referencing page 14, line 8 of Mr. Jessa's testimony, provide all communications by Boston Edison with Olin regarding investigation of the "complaints" and "action plans" and describe in detail the referenced "service upgrades."

Response

Please see the response to Information Request OC-1-9.

Information Request OC-2-5

Referencing page 16, line 2 of Mr. Jessa's testimony, provide all documentation supporting his belief that "the numbers are likely to be much closer."

Response

Basically, Mr. Jessa's testimony is based upon several factors.

First, it is noted that Mr. Hannabury's estimate of WMLP costs as presented in paragraph 4 of his affidavit is not complete and may be understated.

Second, it is noted that the distance across the Olin campus of a connection between Olin switchgear and the Boston Edison system has not been optimized. Thus, a much greater distance is presented in Mr. Hannabury's affidavit for a connection to the Boston Edison system than would be the case if the Olin switchgear location and on-campus distribution system were designed so as to minimize interconnection costs with Boston Edison.

Third, Boston Edison presented several options and preliminary cost estimates to Olin College (see Exhibit ARJ-2) as to which Olin never responded. Mr. Hannabury selected the most costly option for purposes of comparison to WMLP interconnection. Mr. Jessa would contend that one of the less costly options should be fully satisfactory the standpoint of Olin College reliability. Also, the costs of these options are preliminary and could well be less as a result of further refinement of options and as a result of continued discussion with the customer over the appropriate customer contribution.

Information Request OC-2-6

Referencing page 16, line 6 of Mr. Jessa's testimony, does Boston Edison supply WMLP from other than Station #148? If yes, please provide data comparable to that provided for Station #148 regarding distribution performance and service quality to services supplied from such other stations. Particularly, discuss whether such other stations have the problems referenced by Mr. Jessa regarding switching.

Response

WMLP is also supplied from Boston Edison's Station #292 in Newton. Service from Station #292 is comparable to that from Station #148, except with respect to automatic voltage regulation, which is presently being addressed through the transformer replacement discussed in Mr. Jessa's testimony. The issue of service quality from a given station is mostly related to issues regarding service on a particular electrical circuit, rather than to issues pertaining to the substation or substation equipment. The witness does not understand the reference to other stations having problems regarding "switching."

Information Request OC-2-7

Referencing page 17, lines 10-14 of Mr. Jessa's testimony, provide his understanding of the distances for line for Olin to take service from Boston Edison.

Response

The comment in the testimony relates to a purported distance comparison by Mr. Hannabury in paragraph 2 of his affidavit. Depending upon the point of location of Olin College's switchgear, the connections to the NSTAR system could be as close as approximately 1,200 feet from Great Plain Avenue or Curtis Road or 500 feet from Burrill Lane.

Information Request OC-2-8

Referencing page 18, line 2 of Mr. Jessa's testimony, explain in detail all the "expensive facilities", and how they'd be different were electric service to be provided by Boston Edison.

Response

Basically Mr. Jessa is referring to the installation of conduit in and around buildings that have already been constructed. See, for example, the construction plans submitted in Attachment BE-3-21. To some extent this may include the design and engineering of facilities so as to receive service from a particular source or location and the construction of other campus facilities such as roadways and sidewalks that might need to be dug up and replaced.



Information Request OC-2-9

Please provide three (3) samples of a completed work order form for a potential 4 MW load and service applications, if necessary redacting customer name and address.

Response

Please refer to Attachment OC-2-9-A and OC-2-9-B for two sample completed work order forms.

# Griffith & Vary, Inc.

Consulting Engineers

D.T.E. 01-95  
Attachment OC-2-9 (A)

12 Kendrick Road  
Wareham, MA 02571  
(508) 295-0050  
Fax: (508) 295-0003

November 30, 2001

NSTAR Electric  
157 Cordaville Road  
Southborough, Massachusetts 01772



Attention: Mr. Roger DiGiandomenico

**REDACTED**  
**DOCUMENT**

RE: 

Dear Mr. DiGiandomenico:

The following scheme for providing power to the referenced project has been decided upon. Please forward to the proper people to insure that this scheme is a viable option and if there would be any costs which may be applicable to the project.

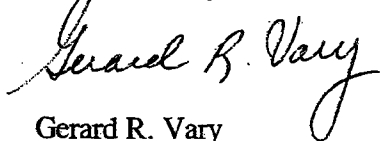
Two separate primary circuits with an automatic switch is the preferred option. We request that the two circuits be brought to the two consecutive poles on  and then run underground to the automatic switch which could be installed on the north side of . The primary service would then run underground to a single pad-mounted transformer on site.

We have enclosed a site plan showing the proposed scheme. If you have any questions or require an additional meeting on this, please call.

Your prompt attention to this matter would be greatly appreciated.

Very truly yours,

Griffith & Vary, Inc.

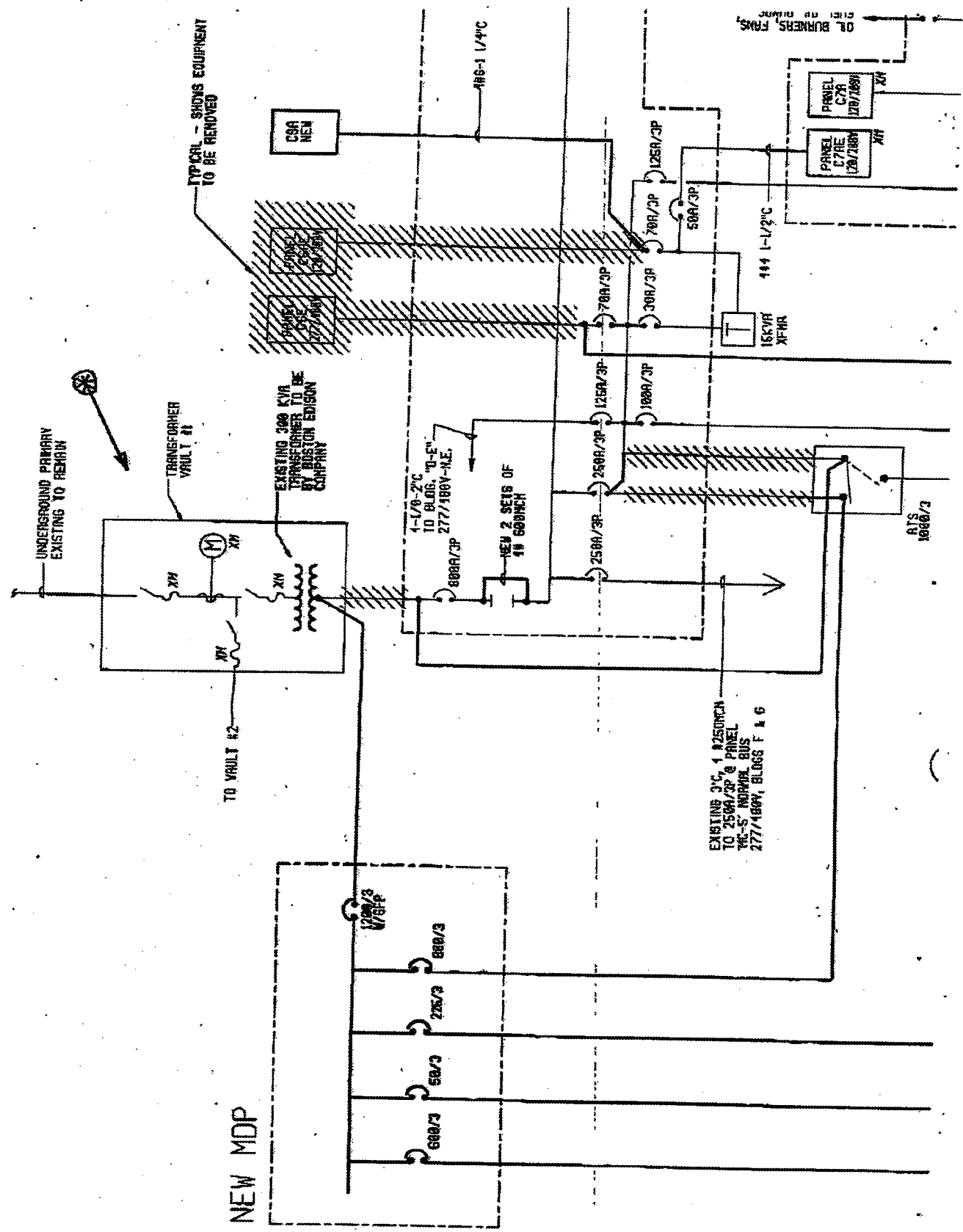


Gerard R. Vary  
Principal

GRV/cwm

Copy to: Paul Brown - Drummey, Rosane, Anderson, Inc.







**REDACTED**  
**DOCUMENT**

**Information Required for Work Order Initiation**

Date: 8/15/01

[REDACTED]

Type of Facility: [REDACTED]

Facility Square Footage: 80,000 SQ. FT. ADDITION  
181,600 SQ. FT. EXISTING  
80,000 SQ. FT. FUTURE  
ADDITION

Requested In Service Date: 6mo - 1 yr?

NSTAR Rep: \_\_\_\_\_

**Customer:**

Name: [REDACTED]  
Billing Address: [REDACTED]  
City, State, Zip: [REDACTED]  
Existing Account or Meter Number (if existing service increase): [REDACTED]  
Telephone: [REDACTED] Tax ID: \_\_\_\_\_

**If Property Owner different than Customer:**

Property Owner Name: [REDACTED]  
Address: [REDACTED]  
City, State, Zip: [REDACTED]  
Phone: [REDACTED]

Brief Description of Service Request: NEW 277/480 VOLT, 3PH. UNDERGROUND  
SERVICE TO NEW ADDITION

Number and Size of Electrical Main Disconnect Switch (in amps): (1) 4000 AMP. (NOW)  
(1) 4000 AMP (FUTURE)

Heating System Energy Source: DUAL FUEL - GAS/OIL

Desired Service Voltage: 277/480 VOLT, 3 PHASE

Number of Meters: Commercial \_\_\_\_\_ Residential \_\_\_\_\_ Public 1

On site Emergency Generator (size in KW and description of use): 400 KW - SERVES  
MOST OF EXISTING BLDG.

**Largest Motor (other than fire pump):**

HP: 30 Phase: 3  
Locked Rotor Current (amps): 218

**Information Required for Work Order Initiation (cont.)****REDACTED**  
**DOCUMENT**

- \* **Breakdown of Demand:** (A detailed Load Letter clearly identifying breakdown of demand).

**Contact Name:****Electrician:** \_\_\_\_\_**License Number:** \_\_\_\_\_**Business Name:** \_\_\_\_\_**Street Address:** \_\_\_\_\_**City, State, Zip:** \_\_\_\_\_**Telephone:** \_\_\_\_\_ **Best Time to Call:** \_\_\_\_\_**NOTES:**

For Temporary Service Requests, please submit a site plan that illustrates the service location.

- \* For Service Increases at existing facility, please submit a single One-Line Diagram.

For New Commercial Services and for New Two 13.8 kv Line Station Electric Service, please submit (2) two copies of the approved local city site plan that illustrates new facility location and proposed location of new utilities (electric, gas, water, sewer, telecommunications) and a single One-Line Diagram.

\*

**General Contractor:****Electrical Engineer of Record:****Notes:**

**REDACTED**  
**DOCUMENT**



**Information Required for Work Order Initiation**

**Date:** December 12, 2001 (revised from October 19, 2001)

**Facility Address:**

**Street:** \_\_\_\_\_  
**Town:** \_\_\_\_\_

**Suite:** \_\_\_\_\_  
**Zip:** \_\_\_\_\_

**Type of Facility:** \_\_\_\_\_

**Facility Square Footage:** 341,600

**Requested In Service Date:** August 2, 2001

**NSTAR Rep:** Robert A. Di Giandomenico

**Customer:**

**Name:** \_\_\_\_\_

**Billing Address:** \_\_\_\_\_

**City, State, Zip:** \_\_\_\_\_

**Existing Account or Meter Number (if existing service increase):** \_\_\_\_\_

**Telephone:** \_\_\_\_\_ **Tax ID:** \_\_\_\_\_

**If Property Owner different than Customer:**

**Property Owner Name:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**City, State, Zip:** \_\_\_\_\_

**Phone:** \_\_\_\_\_

**Brief Description of Service Request:** New 277/480V underground secondary service. The service to be two separate circuits, e.g. one for primary & one for back-up, with automatic switch - see note 1.

**Number and Size of Electrical Main Disconnect Switch (in amps):** 1-4000A/Phase 1B & 1-4000A/Phase 2

**Heating System Energy Source:** Dual fuel, e.g. natural gas & oil

**Desired Service Voltage:** 277/480V, 3-phase

**Number of Meters:** Commercial 1 Residential \_\_\_\_\_ Public \_\_\_\_\_

**On site Emergency Generator (size in KW and description of use):** One-400kW for most of existing building

**Largest Motor (other than fire pump):**

**HP:** 30 **Phase:** 3

**Locked Rotor Current (amps):** 218

**Information Required for Work Order Initiation (cont.)**

**Breakdown of Demand:** (A detailed Load Letter clearly identifying breakdown of demand).

**Electrical Contactor Name:**

Electrician: Wayne Griffin

License Number A8999

Business Name: Wayne J. Griffin Electric, Inc.

Street Address: 116 Hopping Brook Road

City, State, Zip: Holliston, MA 01746

Telephone: Michael Quinn, off: 508 429-8830, x302; Best Time to Call: Mon-Fri: 7:00am-7:00pm

cell: 781 690-1056; fax: 508 429-7825; e-mail: [http://\[REDACTED\]](http://[REDACTED])

**NOTES:**

For Temporary Service Requests, please submit a site plan that illustrates the service location.

For Service Increases at existing facility, please submit a single One-Line Diagram.

For New Commercial Services and for New Two 13.8 kv Line Station Electric Service please submit (2) two copies of the approved local city site plan that illustrates new facility location and proposed location of new utilities (electric, gas, water, sewer, telecommunications) and a single One-Line Diagram.

**General Contractor:**

Mello Construction

43 Taunton Green

Taunton, MA 02780

William Sweeney

Project Manager

Tel: 508 824-7720, x215

Fax: 508 824-1762

E-mail: [b.sweeney@melloconstruction.com](mailto:b.sweeney@melloconstruction.com)

**Electrical Engineer of Record:**

Gerard R. Vary

Griffith & Vary, Inc.

12 Kendrick Road

Wareham, MA 02571


Tel: 508 295-0050

Fax: 508 295-0003

E-mail: [plans@ultranet.com](mailto:plans@ultranet.com)

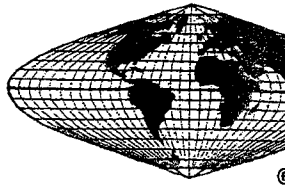
**Notes:** 1. The attached Griffith & Vary, Inc. November 30<sup>th</sup> letter requests:

*"Two separate primary circuits with an automatic switch is the preferred option. We request that the two circuits be brought to the two consecutive poles on [REDACTED] and then run underground to the automatic switch which could be installed on the north side of [REDACTED]. The primary service would then run underground to a single pad-mounted transformer on site."*

2. The Phase 1B project consists of an 80,000 sq. ft. addition. The Phase 2 project consists of another 80,000 sq. ft. addition and renovating the existing 181,600 sq. ft. school
2. Phase 1B and 2 designs are based on a 4,000A, 277/480V, 3-phase service each.
3. As requested in Griffith & Vary, Inc.'s August 16, 2001 letter, please provide "...an estimated transformer size and short circuit or impedance at the transformer".
4. There is an existing temporary service pole on the property serving the construction site. The temporary service crosses the street. In order to avoid excavation for a road crossing, Michael Quinn at Wayne J. Griffin Electric, Inc. requests if NSTAR Electric could furnish and install the secondary service overhead using the existing temporary service pole. Please respond to Michael Quinn.
5. 

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**DOCUMENT**





**HANSON  
ENGINEERS**  
INCORPORATED

D.T.E. 01-95  
Attachment OC-2-9 (B)

*Engineers, Architects & Scientists*

July 10, 2000

Mr. Patrick J. McDonnell  
NSTAR Services Co.  
800 Boylston Street, DART 30  
Boston, MA 02199

**REDACTED**  
**DOCUMENT**

RE: [REDACTED]

Dear Patrick:

The above referenced facility (presently a refrigerated warehouse/distribution center) is being converted from its current occupancy into a technology/telecommunications center. The majority of the available lease space will be configured to accommodate switching gear, racks and DC voltage power supplies and inverters for multiple telecommunications tenants. It is estimated that 75% of the available lease area will be occupied by telecommunications related equipment, with the remainder of the area being split between tenant support areas and common area space.

This facility consists of a total area of approximately 402,120 FT<sup>2</sup>. In addition, it is anticipated approximately 100,000 FT<sup>2</sup> of space will be added in an expansion scheduled to be completed within eighteen months to two years. Following is a projected load calculation based on the building square footage and occupancy. Phase I reflects the initial service request, with Phase II representing the ultimate demand after build-out and expansion.

[REDACTED]

LOAD ANALYSIS – Phase I

Current – 402,120 FT<sup>2</sup>


40,000 FT <sup>2</sup> (Common Areas) @ 10W/FT <sup>2</sup>	=	400 KW
60,000 FT <sup>2</sup> (Support Areas) @ 20W/FT <sup>2</sup>	=	1,200 KW
302,120 FT <sup>2</sup> (Tel Equipment) @ 94W/FT <sup>2</sup>	=	<u>28,400 KW</u>
Total Connected KW	=	30,000 KW

Total Connected Load (Initial) = 30,000 KW = 36,085 Amps

1601 Belvedere Road, Suite 303 South • West Palm Beach, FL 33406 • (561) 471-9370 • Fax: (561) 471-9369

EB0007961 AA0003116 IB0001058

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LOAD ANALYSIS - Phase II

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**DOCUMENT**

Future -- Increased Demand with addition of 100,000 FT<sup>2</sup>

50,000 FT <sup>2</sup> (Common Areas) @ 10W/FT <sup>2</sup>	=	500 KW
75,000 FT <sup>2</sup> (Support Areas) @ 20W/FT <sup>2</sup>	=	1,500 KW
377,120 FT <sup>2</sup> (Tel Equipment) @ 120W/FT <sup>2</sup>	=	<u>45,254 KW</u>
Total Connected KW	=	47,254 KW

Total Connected Load (Future) = 47,254 KW = 56,839 Amps

Power Factor @ 90% = 52,504 KVA = 63,154 Amps

The connected load may be divided as follows:

	Phase I	Phase II
Lighting	3.50 watts/SF	3.50 watts/SF
Receptacles	1.00 watts/SF	1.00 watts/SF
HVAC	31.50 watts/SF	41.00 watts/SF
Elevators	1.60 watts/SF	1.61 watts/SF
General (tenant power)	<u>37.00 watts/SF</u>	<u>47.00 watts/SF</u>
Total	74.60 watts/SF	94.11 watts/SF

Estimated cooling tonnage at complete build-out for the existing facility is between 4,500 and 5,000 tons; including the 100,000 SF expansion, between 5,500 and 6,000 tons. Due to the continuous heat load provided by the equipment, we foresee little requirement for heat, (except perhaps in some common area entries or lobbies). This heat would probably be electric.

We are providing space for between 12 and 16 tenant-furnished stand-by generators (between 1 MW and 2 MW in capacity) and one (or two) life safety generator(s) (between 400 and 750 KW).

Our required service date is December 1, 2000.

Power is a critical success factor for this project. Therefore, we request a written response of B.E.CO.'s ability to meet the above power demand by Friday, July 28<sup>th</sup>. If you have any questions regarding this information, please call Manny Garcia or me at 561-471-9370. Thank you for your attention to this matter.

Sincerely,

HANSON ENGINEERS INCORPORATED



Robert J. Knoedler, P.E., CEM  
Vice President

RJK/jc

cc: Manny Garcia -- HEI



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Estimated Load Demand

	2001				2002				2003			
	Jan. - Mar.	Apr. - Jun.	Jul. - Sep.	Oct. - Dec.	Jan. - Mar.	Apr. - Jun.	Jul. - Sep.	Oct. - Dec.	Jan. - Mar.	Apr. - Jun.	Jul. - Sep.	Oct. - Dec.
Facility Area (SF)	W/SF	KWD	W/SF	KWD	W/SF	KWD	W/SF	KWD	W/SF	KWD	W/SF	KWD
402,120	25	2175	45	3915	60	5220	68	5916	68	5916	74	6438
			15	3000	30	6000	45	9000	60	12000	74	13600
					15	1727	30	3454	45	5180	68	6907
Existing Building		2,175		6,915		12,947		18,370		23,098		26,949
Expansion complete by 11/1/01												
502,120							25	1250	50	2500	68	3400
											25	1250
Est. Total KWD								18,620		25,598		31,595
											35,701	39,322
												43,493
												47,199

Facility Area (SF)

Leased Area (SF)

Percent Switch Area

75%

75%

75%

Existing Building Est. Total KWD

Expansion complete by 11/1/01

75%

75%

Est. Total KWD

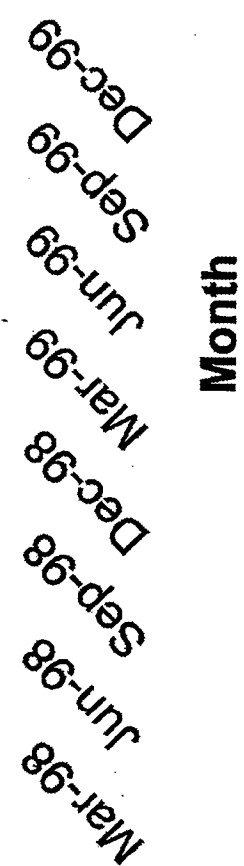
Notes:

Exact electrical demand will depend upon type of tenant and equipment installed, ie: classic switch centers with co-location, etc. are between 65 and 85 watts/SF, while managed services with servers, etc. could be more dense (90 - 110 watts/SF). These calculations assume average overall building demand of 94 watts/SF at final build-out, (assuming 75% switch area). However, service considerations should accommodate potential future demand growth and expansion.

W/SF - watts/square foot  
KWD - Kilowatts Demand

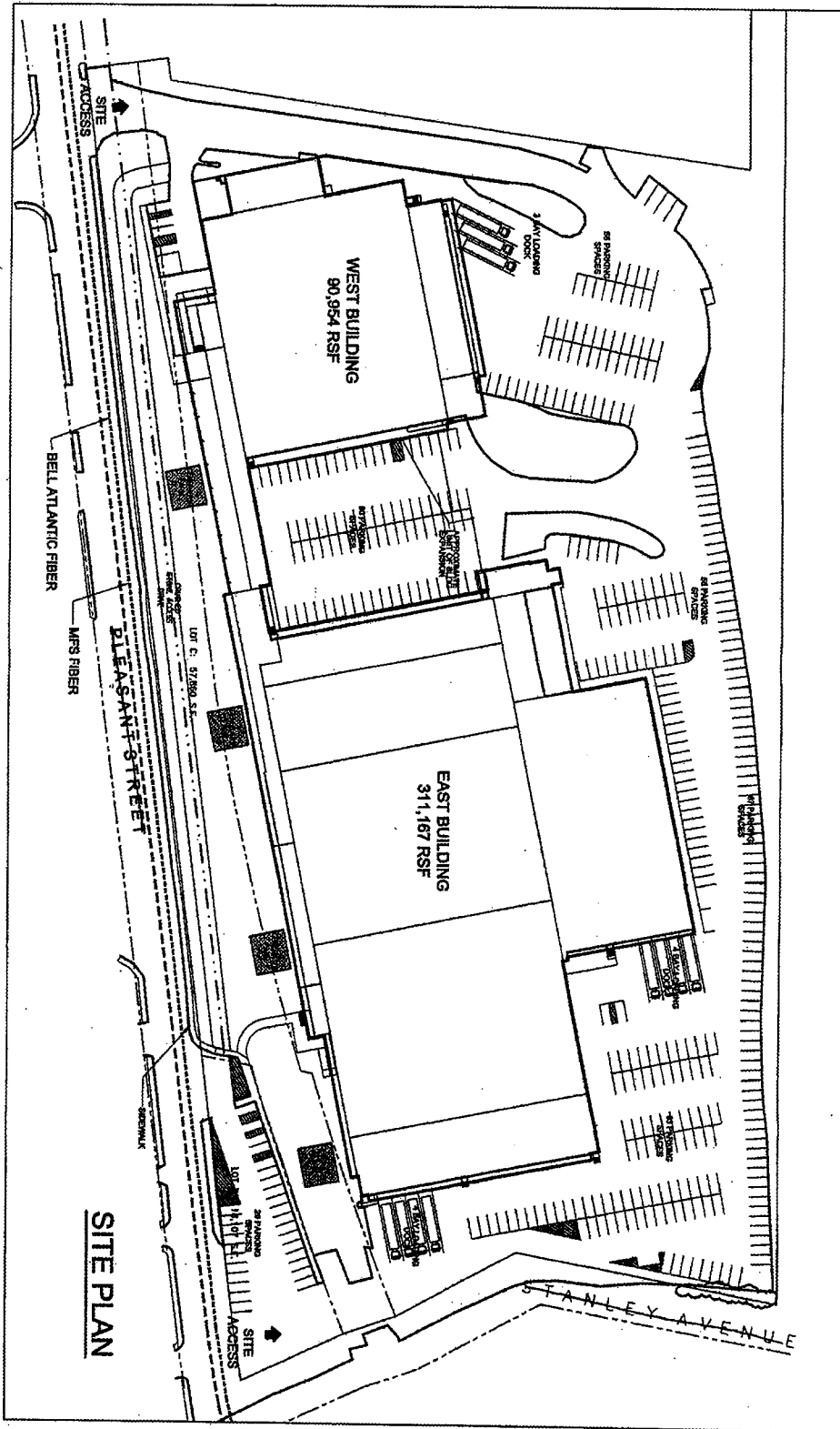
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100%



**FLOOR AREA/ZONING ANALYSIS**

LOT AREA:	13 ACRES
TOTAL RENTABLE AREA:	402,121 SF
TOTAL GROSS MEASURED AREA:	410,858 SF
TOTAL PARKING REQUIRED (BASED ON GROSS MEASURED AREA)	342 SPACES
TOTAL PARKING PROVIDED:	389 SPACES
TOTAL LOADING DOCKS:	11 DOCKS



SITE PLAN

<p>SCALE: 1"=40'-0"</p> <p><b>S-1</b></p>	<p><b>LA&amp;P</b></p> <p>LAROCQUE ARCHITECTURE &amp; PLANNING 1 JORDON ROAD ROSLINDALE, MA 02468</p> <p>TEL: 781.795.1000 FAX: 781.795.1001</p>	<p>TITLE: SITE PLAN</p>	<p>DESIGNED: S.L.</p> <p>APPROVED: S.L.</p> <p>DATE: 02/00/00</p>	<p>PROJECT: [REDACTED]</p> <p>CLIENT: [REDACTED]</p>	<p>PROJECT: [REDACTED]</p> <p>DATE: [REDACTED]</p>
		<p>ARCHITECTURE - PLANNING - INTERIORS</p> <p>2000-10</p>	<p>LEARNER ASSOCIATES, INC. &amp; SONS DEVELOPER: MONSIEUR CAPITAL PARTNERS</p> <p>617 (978) 489-8800 617 (978) 787-4191</p>	<p>PROJECT: [REDACTED]</p> <p>DATE: [REDACTED]</p>	

12 Kendrick Road  
Wareham, MA 02571  
(508) 295-0050  
Fax: (508) 295-0003

August 16, 2001

NSTAR Electric  
157 Cordaville Road  
Southborough, Massachusetts 01772

Attention: Mr. Robert DiGiandomenico

RE: 

Dear Mr. DiGiandomenico:

Enclosed, please find calculations for the electric loads, a site plan showing proposed routing for a new electrical service, a site utilities plan and power one-line drawing for your use.

The project consists of an 80,000 square foot addition as part of Phase 1B and an 80,000 square foot addition and renovation of the 181,600 square foot existing school as part of Phase 2.

The design is based on providing two (2) 4,000 amp. 277/480 volt, 3-phase services to the building, one (1) as part of Phase 1B and one (1) as part of Phase 2.

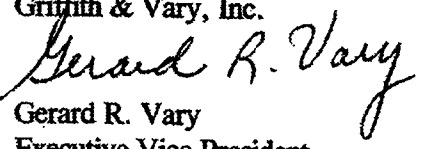
The Phase 1B service will be located in an electric room in the addition and will backfeed the existing building service. The Phase 2 service could be located in the Phase 1B electric room or somewhere in Phase 2.

I am also requesting an estimated transformer size and short circuit or impedance at the transformer.

If you have any questions or require any additional information, please call. Your prompt attention to this matter would be greatly appreciated.

Very truly yours,

Griffith & Vary, Inc.

  
Gerard R. Vary  
Executive Vice President

GRV/cwm  
0103/Load calcs/0801

ELECTRIC LOAD CALCULATION

DEMAND ON EXISTING BUILDING (455 KW/OCT. 2000) = 455,000 W.

1.25 LOADING FACTOR ON EXISTING BUILDING = 113,750 W.

NEW LOADS IN 80,000 SQ. FT. ADDITION:

LIGHTING = 99,266 W.

GENERAL CONVENIENCE RECEPTACLES = 126,250 W.

ELEVATOR (30HP) = 31,820 W.

COMPUTER LOAD = 230,000 W.

MECHANICAL EQUIPMENT (YEAR-ROUND) = 107,249 W.

HEATING EQUIPMENT (WINTER ONLY)  
(LARGEST MOTOR = 30HP) = 51,800 W.

AIR CONDITIONING EQUIP. (SUMMER ONLY) = 526,288 W.

TOTAL = 1,741,423 W.

LESS SMALLEST OF WINTER/SUMMER LOAD (WINTER) - 51,800 W.

1,689,623 W.

FUTURE ADDITIONS (80,000 SQ. FT. x 14 W/SQ. FT.) = 1,120,873 W.

FUTURE COMPUTER LOAD IN EXISTING BLDG.

(181,600 SQ. FT. x 3 W/SQ. FT.) = 544,800 W.

FUTURE AIR CONDITIONING IN EXIST'G BLDG.

(181,600 SQ. FT. x 6.5 W/SQ. FT.) = 1,180,400 W.

TOTAL = 4,535,696 W.

4,535,696 W. @ 277/480 VOLT, 3 PHASE = 5465 AMPS.

5465 AMPS. @ .8 PF = 6831 AMPS.

CALCULATIONS INDICATE THAT THE TOTAL PROTECT  
WILL REQUIRE (2) 4000 AMP. 277/480 VOLT, 3 PHASE  
SERVICES. (1) 4000 AMP SERVICE IS DESIGNED TO  
BE INSTALLED IN THE PHASE 1B PORTION WHICH  
IS THE NEW 80,000 SQ. FT. [REDACTED]  
AND THE SECOND 4000 AMP. SERVICE WILL BE  
DESIGNED AS PART OF THE PHASE 2 PORTION  
WHICH IS ANOTHER 80,000 SQ. FT. ADDITION  
AND RENOVATION OF THE EXISTING [REDACTED]  
THE TWO SERVICES COULD GO IN THE NEW  
ELECTRIC ROOM IN THE FIRST ADDITION OR ONE  
COULD GO IN THE FIRST ADDITION AND THE  
OTHER COULD GO IN THE SECOND ADDITION.  
INFORMATION SHOWN ON THE ELECTRICAL SITE  
PLAN AND POWER ONE-LINE DIAGRAM IS  
DESIGNED AROUND ONE 4000 AMP SERVICE  
AT THIS TIME (PHASE 1B).

**REDACTED**  
**DOCUMENT**



Information Request OC-2-10

Referencing page 13, lines 16-20 of Mr. Niro's testimony, please specify in detail all the costs that would make an interconnection "off of Great Plain Avenue" "much lower cost" than an interconnection "near the Wellesley border."

Response

The primary factor is the additional length of cable and ductbank. Mr. Hannabury provides a distance in his affidavit for the "primary" connection of 2750 feet. If the switchgear were located closer to Great Plain Avenue (say, at about 1200 feet as referenced in response to Information Request OC-2-7) the cost differential would be approximately \$232,500 using a nominal cost of \$150 per foot for installation of ductbank and primary cable. A secondary factor would relate to the suboptimal timing of such a connection which could have been much more readily accomplished coincident with the installation of other underground service connections and the construction of other campus facilities.

Information Request OC-2-11

Referencing page 14, line 10 of Mr. Niro's testimony, what is "greater certainty"?

Response

The certainty that electric customers within a given area will be connected to the Boston Edison system allows for better planning of future loads and for the most efficient construction and utilization of scarce distribution, transmission and substation capacity, and for the utilization of scarce space in the public ways. Conversely, uncertainty as to whether a future developable parcel will or will not produce load that is connected to the electric system leads to the inefficient utilization of resources.

Information Request OC-2-12

Referencing pages 17 and 18 of Mr. Niro's testimony, please describe Boston Edison's position on the concept of serving Olin as described in such testimony. In that context, could infrastructure costs be saved?

Response

Such scenarios involving fringe customers are typically limited to small customers with a limited amount of load or situations where there is a significant obstacle, such as wetlands, that would drive the costs up greatly. Such an approach would generally not be undertaken where the Company's system already extends to, and in this case, onto the customer's property and service can be provided at a reasonable cost relative to the amount of load and other new customer interconnections of a similar size and type. Such situations would need to be addressed on a case-by-case basis and the reduction or elimination of unnecessary "infrastructure" costs could be a consideration. Although the Company is always open to reasonable alternatives in providing service to its customers, it does not seem that the circumstances in the present case are conducive to providing service to Olin as a fringe customer. Specifically, Olin represents a large load of 3 to 4 megawatts that would be beneficial for the Company and its customers to serve. Also, the Company believes that it can provide Olin with reliable service at a reasonable cost in accordance with its Terms and Conditions and approved rates. Further, there is no insurmountable obstacle, such as wetlands or public way crossings, that would make providing service to Olin impracticable. Accordingly, it does not appear that serving Olin under the fringe customer model would be appropriate.

Information Request OC-2-13

Provide all workpapers and any documentation showing the calculation and specification of all the costs of the options set forth in Exhibit ARJ-2.

Response

Please refer to Attachment OC-1-10, attached to the response to Information Request OC-1-10.

Information Request OC-2-14

List all other 3-4 megawatt customers (or larger) that are located on BECO's service territory line that have initiated service since 1997 and that could have been served by a municipal light plant or another electric distribution company. Please describe the cost savings that could have been achieved by such customers by connecting with other suppliers or distribution companies.

Response

Boston Edison is not aware of any such customers.